

**L3(5.3) - Transformations & Graphing from Vertex Form**vertex form:  $y = \pm a(x - h)^2 + k$ 

+, parabola opens up  
 -, parabola opens down

- if  $a > 1$ , vertical stretch
- if  $0 < a < 1$ , vertical compression

- $h$  is the  $x$ -coordinate of the vertex
- will result in a horizontal shift (left or right).

- $k$  is the  $y$ -coordinate of the vertex
- will result in a vertical shift (up or down)

Mar 20 - 4:17 PM

To graph, choose a strategy:

## 1. Table of Values

- starting method for any graph
- try to choose  $x$ -values around axis of symmetry
- calculate  $y$ -values and plot points

## 2. Transformations

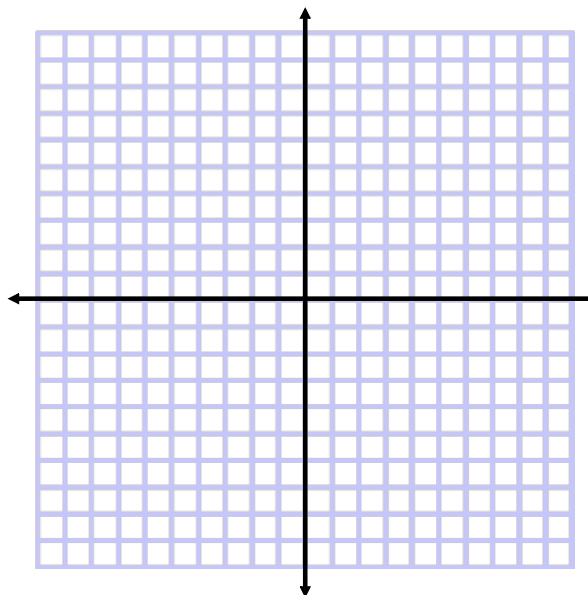
- determine transformations in correct order
- apply transformations to key points from  $y = x^2$

## 3. Vertex &amp; Step Pattern

- determine location of vertex
- determine step pattern compared to  $y = x^2$
- note direction of opening (vertical reflection?)
- build parabola starting at vertex

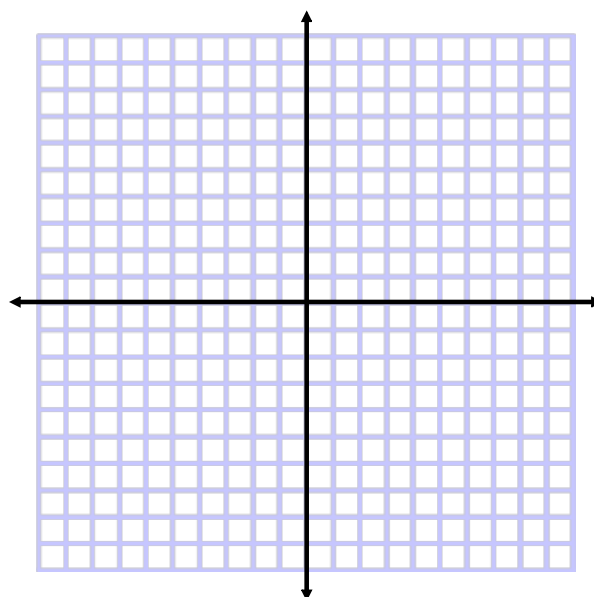
Nov 13-9:57 PM

Ex.1 Graph  $y = 2(x - 3)^2 - 4$  by transforming points from  $y = x^2$ .



Nov 13-10:02 PM

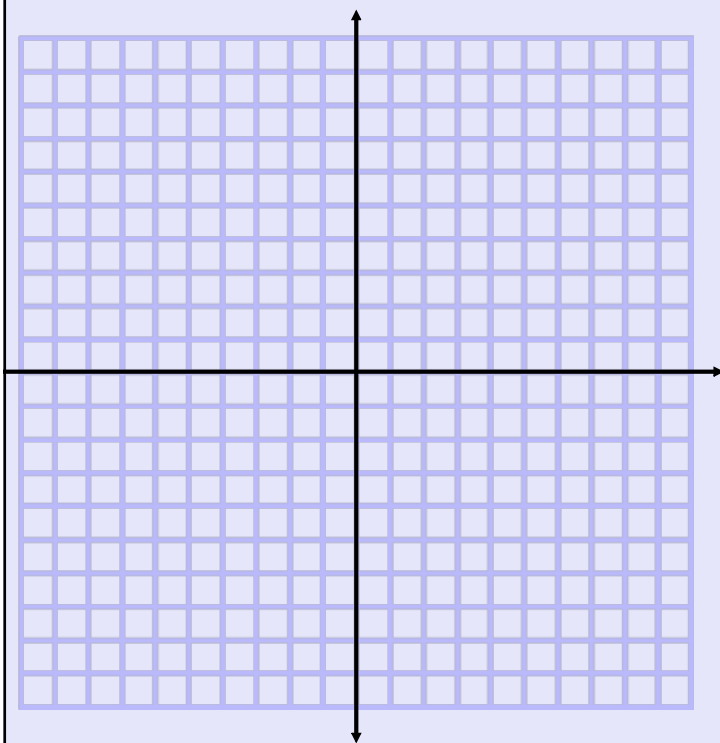
Ex.2 Graph  $y = -0.5(x + 2)^2 - 3$  using the vertex and step pattern.



Nov 13-10:04 PM

State the vertex and sketch the step pattern, then graph.

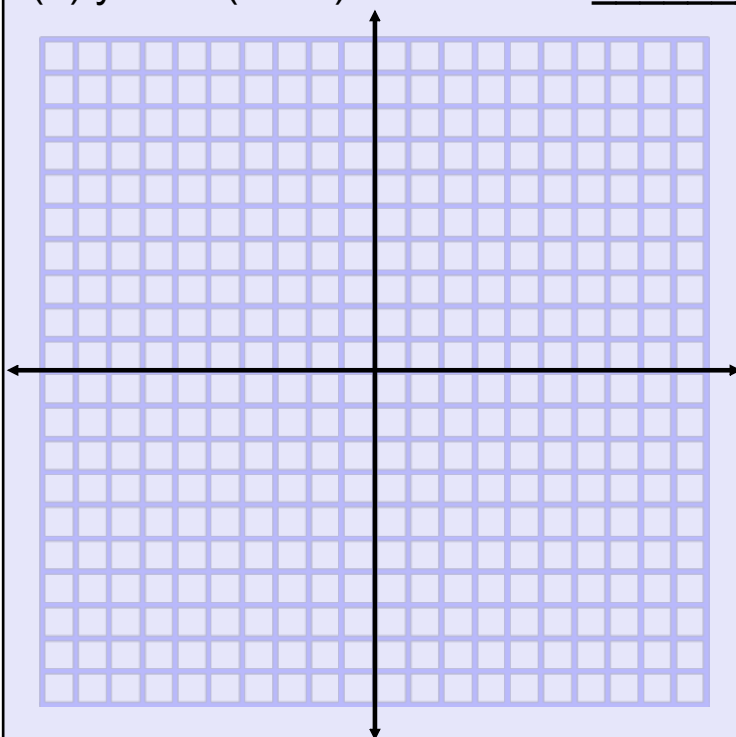
(a)  $y = -(x - 5)^2 + 4$  Vertex \_\_\_\_\_ Step



Apr 27-8:34 PM

State the vertex and sketch the step pattern, then graph.

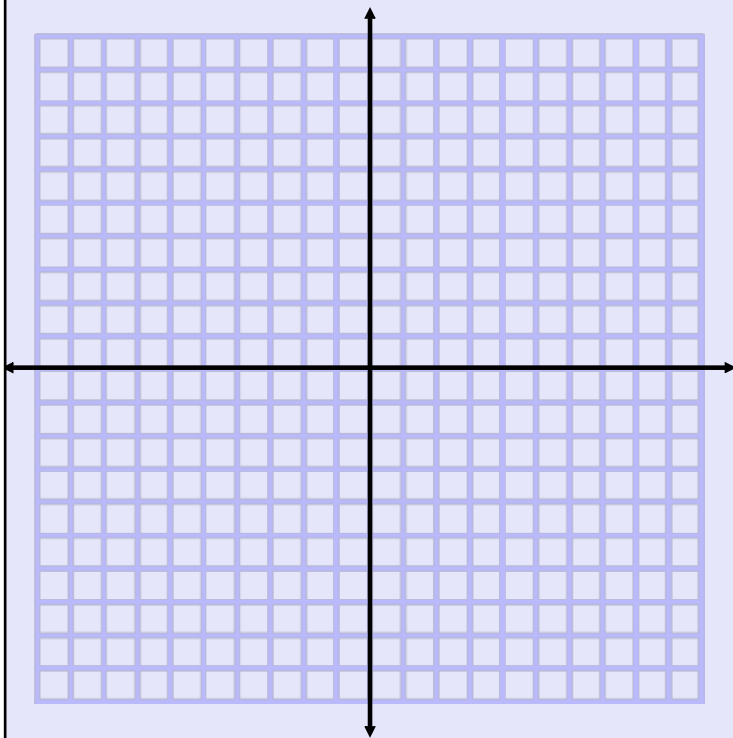
(b)  $y = 0.5(x + 3)^2 - 8$  Vertex \_\_\_\_\_ Step



Apr 27-8:34 PM

State the vertex and sketch the step pattern, then graph.

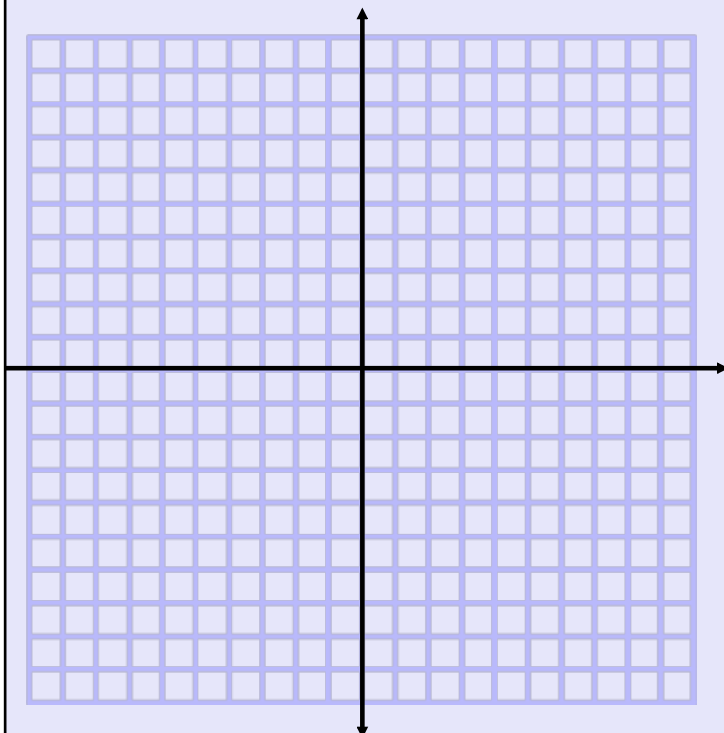
(c)  $y = -2(x - 6)^2 + 4$  Vertex \_\_\_\_\_ Step



Apr 27-8:34 PM

State the vertex and sketch the step pattern, then graph.

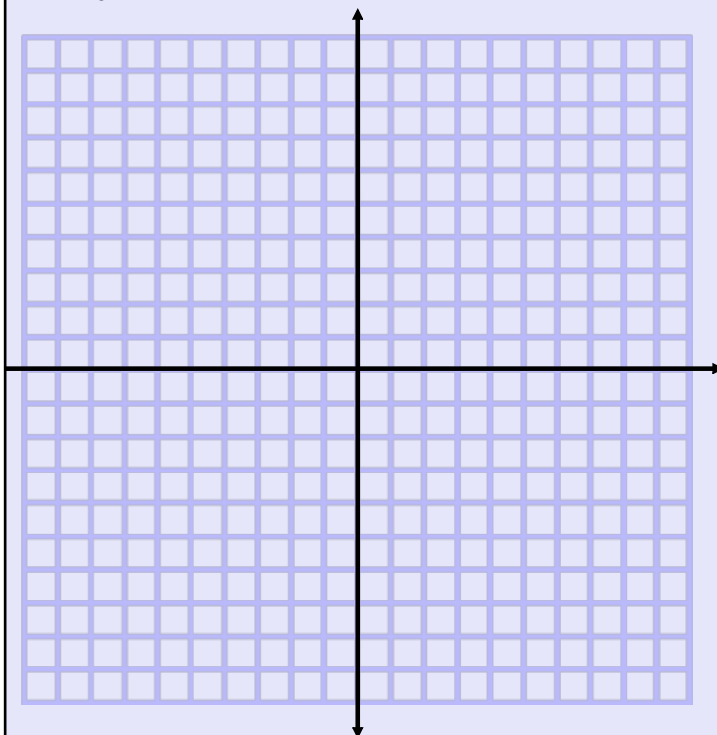
(d)  $y = 3(x + 5)^2 - 2$  Vertex \_\_\_\_\_ Step



Apr 27-8:34 PM

State the vertex and sketch the step pattern, then graph.

(e)  $y = -(x - 4)^2 + 5$  Vertex \_\_\_\_\_ Step



Apr 27-8:34 PM

Assigned Work:

p.269 # 1 - 3 (basics)  
# 4odd, 5odd, 6, 7odd  
# 11, 13, 14, 15, \*10

Nov 10-8:41 AM